

REMARKS

The present application is a Rule 114 Request for Continued Examination (RCE) of application Serial No. 10/761,956 filed January 21, 2004.

In an amendment after final filed by facsimile on May 22, 2006, applicants requested reconsideration of the March 22, 2006 final rejection of claims 1, 3 and 13-15. In an Advisory Action dated June 7, 2006, the Examiner advised that the May 22 amendment after final does not overcome the prior art rejection of claims 1, 3 and 13-15 in the final Office Action. The Examiner further advised that claims 5-6 are allowed and that claims 2, 4, 7-12 and 16-20 remain objected to as being dependent upon rejected base claims, but would be allowed if rewritten in independent form to incorporate the subject matter of the respective base claims and any intervening claims.

Applicants present this preliminary amendment in order to more clearly delineate the inventive subject matter of independent claim 1 and dependent claim 14 to further patentably distinguish from the prior art of record.

In accordance with the present response, independent claim 1 and dependent claim 14 have been amended to recite that the input and output shafts of the transmission mechanism have respective longitudinal axes disposed "substantially" perpendicular to one another. New claims 21-24 have been

added to provide a fuller scope of coverage. Paragraph [0065] of the specification has been revised to conform the terminology used to identify the "output-shaft receiving section" of the transmission case.

As set forth in detail below, the combined teachings of Hanafusa and Nagaoka do not disclose or suggest the specific angular relationship (i.e., "substantially perpendicular") between the respective longitudinal axes of the transmission mechanism's input and output shafts recited in amended claims 1 and 14. Hanafusa and Nagaoka also fail to disclose or suggest the specific structural combination of the working machine recited in independent claim 13.

Brief Summary of Invention

The present invention is directed to a working machine, such as snow removing machines and cultivating machines.

Figs. 12-14 show conventional working machines in the form of snow removing machines. As described in the specification (pages 1-4), the conventional snow removing machines have a large number of component parts and are associated with a large size and weight as well as a relatively complicated shape and high rigidity. For example, due to their excessive length, the conventional snow removing machines have poor turning capability. As a result, the

traveling performance of the conventional snow removing machines has been ineffective in providing smooth snow removal operations with high efficiency.

The present invention overcomes the drawbacks of the conventional art. Figs. 1-7 show an embodiment of a working machine 10 according to the present invention embodied in the claims. The working machine 10 has a transmission case 50 having a transmission mechanism 130 accommodated therein. The transmission mechanism 130 has an input shaft 131 having a first longitudinal axis and an output shaft 132 having a second longitudinal axis extending in a direction substantially perpendicular to the first longitudinal axis (Fig. 5). A working unit 70 is mounted to a front portion or a side portion of the transmission case 50 and is connected to the output shaft 132 of the transmission mechanism 130. A working drive source 61 is connected to the input shaft 131 of the transmission mechanism 50 for driving the working unit 70 via the transmission mechanism 130. The working drive source 61 is mounted to an upper surface portion of the transmission case 50. A traveling unit 30L, 30R has at least one driving axle 34L, 34R mounted to a side portion of the transmission case 50. An electric motor 20L, 20R is mounted to a side portion of the transmission case 50 for driving the traveling unit 30L, 30R.

By the foregoing construction, the size and weight, as well as the number of components, of the working machine 10 according to the present invention are substantially reduced as compared to the conventional art. As a result, the operability of the working machine is improved, including the turning capability of the working machine during a working operation.

Applicants respectfully submit that claims 1, 3 and 13-15 patentably distinguish from the prior art of record.

Independent Claim 1 and Dependent Claim 3

Independent claim 1 is directed to a working machine and requires a transmission case having a transmission mechanism accommodated therein, the transmission mechanism having an input shaft having a first longitudinal axis and an output shaft having a second longitudinal axis extending in a direction substantially perpendicular to the first longitudinal axis.

Hanafusa discloses a snow plow having a working unit 13, a traveling unit 12, an engine 14 (working device), an electric motor 21L, 21R, and a transmission belt 103 for driving an output shaft 105 connected to the working unit 13 (Figs. 1 and 5). As recognized by the Examiner, Hanafusa does not disclose or suggest a transmission mechanism having a vertically oriented input shaft for transmitting power from a working device to an output shaft. In Hanafusa, the belt 103

of the transmission mechanism transmits power from the engine 14 to the output shaft 105 connected to the working unit 13.

As further recognized by the Examiner in the final Office Action and Advisory Action, Hanafusa also does not disclose or suggest the specific positional relationship between the input and output shafts of the transmission mechanism specified in amended claim 1. More specifically, Hanafusa does not disclose or suggest a transmission mechanism comprised of an input shaft having a first longitudinal axis and an output shaft having a second longitudinal axis extending in a direction substantially perpendicular to the first longitudinal axis. As described in the specification, the positional relationship between the input and output shafts of the transmission mechanism reduces the overall front-to-rear dimension of the transmission case and, therefore, the overall dimension of the working machine. As noted above, Hanafusa does not disclose or suggest a vertically oriented input shaft.

Nagaoka discloses a working machine having a working unit connected to an output shaft 71 of a transmission mechanism driven by a working device 20. A vertically oriented input shaft 51 transmits power from the working device 20 to the output shaft 71. As recognized by the Examiner in the Advisory Action (pg. 2, section 3), in Nagaoka the input shaft 51 is not connected "substantially

perpendicular" to the output shaft 71. In Nagaoka, the longitudinal axes of the transmission mechanism input and output shafts do not extend "substantially" perpendicular to one another. As shown in Fig. 2 and described in columns 7, lines 10-15 of Nagaoka, the input shaft 51 and the output shaft 71 are disposed at an angle about 60° relative one another (i.e., the angle formed between the input and output shafts 61, 71 is not substantially 90°).

While the phrase "substantially perpendicular" envisions some amount of deviation from exactly perpendicular, this phrase is understood in the art to mean an angle of 90 degrees, or as close thereto as practicable. As note above, the input and output shafts in Nagaoka are disposed at an angle of about 60 degrees relative to one another, which is neither 90 degrees nor "close" to 90 degrees.

Thus Hanafusa and Nagaoka, either alone or in combination, do not render obvious the structural combination of the working machine recited in amended independent claim 1.

Claim 3 depends on and contains all of the limitations of amended independent claim 1 and, therefore, distinguishes from Hanafusa and Nagaoka at least in the same manner as amended independent claim 1.

Independent Claim 13 and Dependent Claims 14-15

Independent claim 13 defines the invention in a different manner and provides a different scope of coverage

from independent claim 1. For example, while not limited to the specific positional relationship between the longitudinal axes of the input and output shafts of the transmission mechanism as required by independent claim 1, claim 13 requires that the working unit, the working drive source and the transmission mechanism are pivotable about a central axis of the driving axle of the traveling unit. No corresponding structure is disclosed or suggested by the combined teachings of Hanafusa and Nagaoka.

In the final Office Action, the Examiner contends that the working machine in Hanafusa is capable of being pivotable about a central axis of the rear wheels of the combined working machine "if enough backward force is applied to the handle with the backward wheels held stationary". Applicants vigorously disagree with the Examiner's contention and with the Examiner's interpretation of the reference to Hanafusa to arrive at the invention recited in independent claim 13.

Applicants respectfully submit that the Examiner's proposed modification of Hanafusa is improper because the prior art teaches away from the claimed combination. A reference teaches away when a person of ordinary skill in the art, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that the applicants

took. In re Gurley, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994). Stated another way, a reference teaches away if it suggests that the line of development falling from the reference's disclosure is unlikely to be productive of the result sought by applicants. W.L. Gore & Assocs. v. Garlock, Inc., 220 USPQ 303, 311 (Fed. Cir. 1983) (the totality of a reference's teachings must be considered), cert. denied, 469 U.S. 851 (1984); In re Caldwell, 138, USPQ 243, 245 (CCPA 1969) (reference teaches away if it leaves the impression that the product would not have the properties sought by the applicant).

In this case, the prior art teaches away from the claimed combination because Hanafusa does not disclose or suggest any structure that would permit a working unit, a working drive source and a transmission mechanism of the working machine to pivot about a central axis of a driving axle of the working machine. The Examiner's application of Hanafusa in the rejection requires a backward force to be applied to one or more of the foregoing components of the working machine relative to a central axis of the rear wheels, while holding the rear wheels stationary, in order to achieve what the Examiner contends is the pivotal movement recited in independent claim 13. However, since Hanafusa does not teach any structure which permits such components of the working machine to pivot about the central axis of the rear wheels,

the application of such force, if at all possible, would cause such components to potentially break away from the structure of the working machine. Indeed, the modification of Hanafusa proposed by the Examiner would render the working machine of Hanafusa inoperable. Thus the structure of the working machine resulting from the Examiner's modification of Hanafusa would clearly be contrary to the teachings of Hanafusa.

Thus, one of ordinary skill in the art at the time the invention was made would not have been led to cause the working machine in Hanafusa to pivot about a central axis of the rear wheels of the combined working machine by application of enough backward force to the handle with the backward wheels held stationary, as proposed by the Examiner. Accordingly, independent claim 13 is not rendered obvious by the teachings of Hanafusa because the reference does not suggest the modifications that would be needed to replicate the claimed invention. In the context of obviousness rejections based upon the purported obviousness of effecting a required modification, the Federal Circuit has held that "[t]he mere fact that the prior art may be modified in [a given] manner ... does not make the modification obvious unless the prior art suggested the desirability of the modification". In re Fritch, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992). There is nothing in Hanafusa that would have suggested modifying the structure of the working machine to achieve a

working machine having a working unit, a working drive source and a transmission mechanism which are pivotable about a central axis of the driving axle of the traveling unit, as discussed above and recited by independent claim 13.

Claims 14-15 depend on and contain all of the limitations of independent claim 13 and, therefore, distinguish from Hanafusa and Nagaoka at least in the same manner as independent claim 13.

Moreover, there is a separate ground for patentability of amended dependent claim 14 which includes the additional limitation that the input and output shafts of the transmission mechanism have respective longitudinal axes disposed substantially perpendicular to one another. No corresponding positional relationship between the longitudinal axes of the transmission mechanism input and output shafts is disclosed or suggested by Hanafusa and Nagaoka as set forth above for amended independent claim 1.

Applicants respectfully submit that the prior art of record also does not disclose or suggest the subject matter recited in newly added claims 21-24.

Claims 21-22 and 23-24 depend on and contain all of the limitations of independent claims 1 and 13, respectively, and, therefore, distinguish from the prior art of record at least in the same manner as claims 1 and 13.

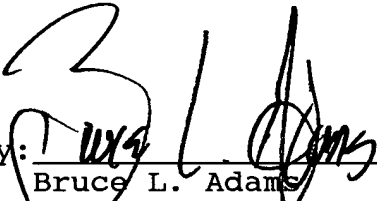
Moreover, there are separate grounds for

patentability of new dependent claims 21-24 which are directed to the specific structure of the transmission case. With reference to the embodiment shown in Figs. 6-7, for example, claims 21-24 are directed to the structure of the transmission case 50 which comprises an output-shaft receiving section 54 and a motor reception section 56. This embodiment is described in paragraph [0065] of the specification. No corresponding structure is disclosed or suggested by the prior art of record.

In view of the foregoing amendments and discussion,
the application is believed to be in allowable form.
Accordingly, favorable reconsideration and allowance of the
claims are most respectfully requested.

Respectfully submitted,

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